# Executive summary. Salifort Motors case

Building Classification Models  to predict whether an employee will resign (quit)

**Overview**

Salifort Motors wants to reduce employee churn and find out the main reasons why employees quit.

**Problem**

It is necessary to prepare the data and find out whether the available features are suitable for predicting employee turnover. It is possible that some features are correlated with each other and influence the outcome of the model prediction.

**Solution**

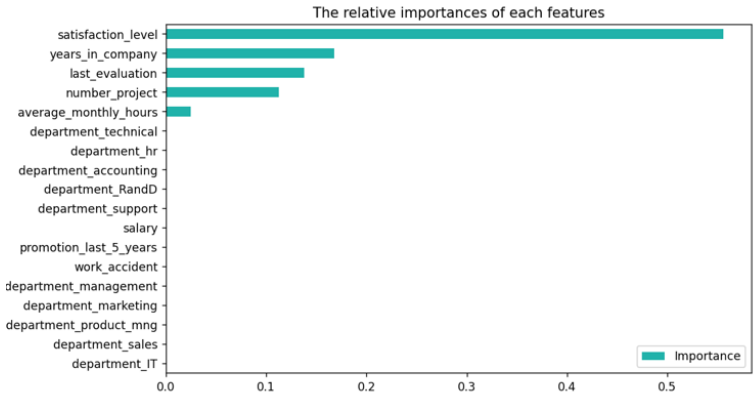
Prepare data, select relevant features, explore the relationships between different features, select, build and test predictive models (as the outcome variable is categorical, the models selected are Logistic Regression Model, Decision Tree Model, Random Forest Model, XGBoost Model). Based on the results of testing the models, propose the best performing model.

## Details

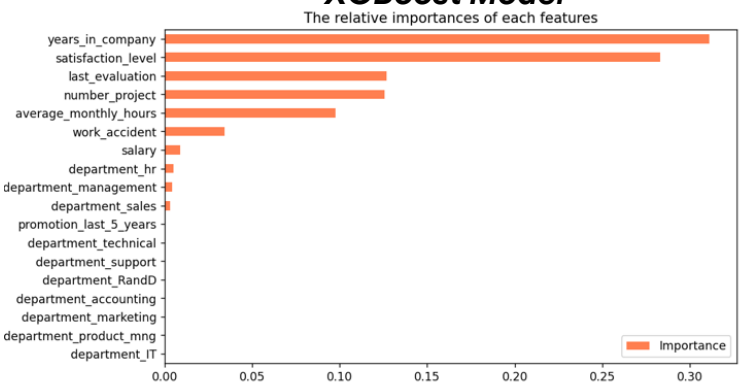
**Results of the model**

Logistic Regression Model was a weak model (AUC score is 0.599 which is slightly higher than random guessing - random predictions AUC score is 0.50). The other three models performed significantly better (data for trained models: Decision Tree Model AUC score is 0.972, Random Forest Model AUC score is 0.983, and XGBoost Model AUC score is 0.982). The graphs show the features arranged in the order of their importance in model building.

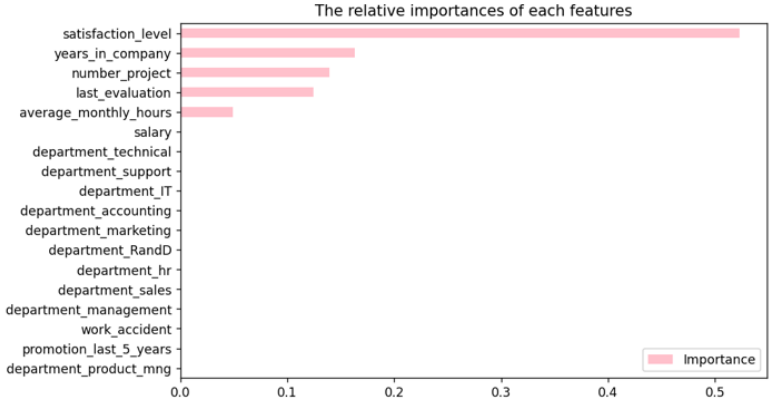
***Decision Tree Model***




***XGBoost Model***




***Random Forest Model***




## Next Steps / Recommendations

We can suggest: introduce a system of job satisfaction assessment once a certain period (e.g. quarterly) so that the data on employee satisfaction are up-to-date; conduct a salary survey and index it to employees; fix the number of projects an employee can work on (optimally 3-4); develop a system of incentives and salary indexation regardless of the hours of overtime (if only overtime is paid, employees take on more projects, burn out and quit); introduce a work regime for employees who are not paid for their work; and introduce a system of pay for overtime.